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A PHONOLOGICAL SKETCH OF STANDARD PANJABI.

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THIS SKETCH CONSTITUTES A PRELIMINARY STUDY FOR A DESCRIPTIVE GRAMMAR OF PANJABI, THE LANGUAGE SPOKEN BY NEARLY 30 MILLION PEOPLE IN THE INDIAN AND PAKISTANI PROVINCES OF PUNJAB, AND BY SIKHS AND PANJABI MUSLIMS IN EAST AFRICA. AN INDO-ARYAN LANGUAGE, PANJABI (ALONG WITH HINDI) IS THE OFFICIAL LANGUAGE OF EAST PUNJAB, AND THE PRESENT STUDY IS BASED ON THE EDUCATED SPEECH OF THE MALWI DIALECT. AN OUTLINE OF THE BASIC PHONOLOGY IS GIVEN WITH A BRIEF DISCUSSION OF THE SUPRASEGMENTAL PHONEMES, INTONATION PATTERNS, AND SEGMENTAL PHONEMES WHICH INCLUDE VOWELS AND CONSONANTS. PANJABI INTONATION IS COMPLICATED BY THE USE OF PITCHES AND TONES, OF WHICH THERE ARE THREE TONE PHONEMES, OCCURRING ONLY IN STRESSED SYLLABLES. TEN CONTRASTING VOWEL POSITIONS ARE POSSIBLE IN PANJABI, AND ALL VOWELS OCCUR IN BOTH STRESSED AND UNSTRESSED SYLLABLES. SEMIVOWELS ARE NOT CONSIDERED DISTINCT PHONEMES, BUT ARE GENERALLY INTERPRETED AS ALLOPHONES OF OTHER SHORT VOWELS. DIPHTHONGS ALSO OCCUR. ALL CONSONANTS, OF WHICH THERE ARE 26, OCCUR LONG (PROLONGED AND FORTIS). ASPIRATION IS PHONEMIC. THE SYLLABIC STRUCTURE CONSISTS OF A NUCLEUS PLUS PRECEDING AND/OR FOLLOWING CONSONANTS, AND CLUSTERS ARE COMMON. THIS ARTICLE WAS PUBLISHED IN "STUDIES IN LINGUISTICS (SIL)," VOLUME 18, NUMBERS 1 TO 4, SEPTEMBER 1966, AND IS ALSO AVAILABLE FROM GEORGE L. TRAGER, EDITOR, "STUDIES IN LINGUISTICS," SOUTHERN METHODIST UNIVERSITY, DALLAS, TEXAS 75222. (FB)

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A PHONOLOGICAL SKETCH OF STANDARD PANJABI

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[PA1431.23. Panjabi—Phonemics.]

0.0. Foreword. There exist very few studies of the Panjabi language, and, as far as the author knows, no modern description of it is in print. The present paper, without any claim to completeness, is conceived of as a preparatory study for a descriptive grammar of Panjabi. The author is deeply thankful to his unpaid informants, above all to Miss Manjeet Kaur Grewal, without whose always patient and intelligent cooperation this paper would not have been possible, and to Mr. Javaid Azar. He is also indebted to Professor Robert Evans and to Professor Carleton Hodge for many useful methodological suggestions.

0.1. Introduction. Panjabi is an Indo-Aryan language. Dialects of the Panjabi language, with marked phonetic and lexical differences, are spoken today in the Indian and Pakistani provinces of Panjab, and by several large communities of Sikhs and Panjabi Muslims in East Africa, where there are now about sixty thousand Panjabi speakers, in Singapore, in Canada, and elsewhere.

In India and Pakistan the native speakers of mutually intelligible dialects of Panjabi can be estimated at some thirty million. Along with Hindi, Panjabi is the official language of East Panjab, and it possesses a fast growing literature. Standard Panjabi is based largely on the cultivated speech of the provinces of Malwa and Majh.

The present description is based on the Malwi dialect, which was taken as the standard for the translation of the Bible during the last century. The dialect of Amritsar and Lahore, called Majhi, differs only slightly from the Malwi of Ludhiana and Chandigarh.

1.0. The phonemes of Malwi Panjabi are the following:

Suprasegmental phonemes:

Pitches: /¹ ² ³/

Tones: level (unmarked)
low rising /˩/
high falling /˥/

Terminals: /‖/, /‖/, /#/

Open transition: /+/

Nasalization: /~/

Segmental Phonemes:

Vowels:

Long: /i e ɛ a ɔ o u /

Short /y ə w /

Consonants:

Obstruents:

stops: /p b t d ṭ ḍ k g/

aspirated: /th ṭh kh /

affricated: /c j/ and aspirated /ch/

fricatives: /f v s z š h/

Sonorants:

nasals: /m n ṇ/

flap: /ṛ/

trill: /ṛ̃/

lateral: /l/ (In other dialects of Panjabi there is a retroflex /ḷ/ in contrast with /l/.)

1.1. Pitches and tones. The analysis of Panjabi intonation patterns is complicated by the occurrence of pitches and tones. Pitch /^{1}/ indicates a lowered pitch, /^{2}/ the normal pitch, and /^{3}/ a heightened pitch. The intonational pattern of a plain, neuter statement is /231#/. There are three tone phonemes in Panjabi. The tone to be taken as basic, or level, is that common to the large majority of morphemes, and which appears impressionistically to be roughly equidistant from the other two contrasting tone phonemes. The latter ones can be described as:

a) low rising tone /˨/

b) high falling tone /˥/

These occur in stressed syllables only. The interplay of pitches and tones often alters the intonational pattern and obscures the relative levels of pitches and tones. The following examples are intended to exemplify the fact, not to exhaust the subject.

In

(a) /^{2}roti vaste ^{3}mʌ̱ṭar nɔ̃^{1}# / "there are peas for dinner"

all words have level tone and the pitch levels are clearly audible.

But in

(b) /²roti vaste ³mâ nẽ¹# / "there are lentils for dinner"

although the intonational pattern is still the same, the word /mâ/ in (b) is heard at an apperently different level than /mət̪ər/ in (a), because of its high falling tone.

In

(c) /²roti vaste ³kr̪â si¹ # / "there was halva for dinner"

one hears /kr̪â/ exactly at the same level as /mâ/ in (b), because /kr̪â/ has the same tone as /mâ/. On the other hand, in

(d) /²roti vaste ³kwkkər si¹ # / "there was chicken for dinner"

/kwkkər/ is at the same level as /mət̪ər/ in (a), because both words have level tone. Thus, if /hɛ̨/ is substituted for /si/ in (c) and (d), the final pitch would still be /¹/, but /hɛ̨/ would be heard higher than /nẽ/ in (a) or (b). The pitch of a given word in a given intonational span results therefore from an operation of addition or subtraction with the tone of the word in question, the level tone counting as zero. Examples of phonemic tone contrasts are: /kall/'yesterday', /kal̨l/'send'; /son̪a/'gold', /sôn̪a/'beautiful'; /tar/'wire', /tar̨/'spray'.

Syllables containing both tones are not uncommon. The low rising tone always comes first: /pa̋bi/'brother's wife', /tỳd̪/'stomach', are those of most common occurrence. These on phonetic grounds ought perhaps to be analysed as [paâbi], [tyŷd̪].

1.2. Terminals. The three terminals occur at the end of intonational spans. /|/ indicates a lengthening out of the preceding syllable, without appreciable change in pitch. /‖/ has the same effect, but always indicates a rise in pitch. /#/ indicates a fading out of the syllable before silence. It occurs frequently with pitch /¹/.

1.3. Nasalization. Nasalization is a vowel coloring with phonemic significance. It occurs only as a suprasegmental of long vowels in final position. All long vowels may occur nasalized in final position: /nə̃ĩ/'not', /nə̃/'are', /mɛ̃/'I', /tã/'then, /tũ/'you', /kyõ/ 'why', /nə̃/'nine'. Examples of phonemic contrast are /pɛ̃la/'first', /pɛ̃lã/'in the first place'; /hɛ̨/'is', /hɛ̨̃/'you are'.

All vowels automatically acquire some degree of nasalization in position before a nasal. This, being automatic, is not indicated in the transcription.

1.4. Stresses. Stress is predictable in Panjabi and need not be indicated in a phonemic transcription. The following are the rules determining the position of the primary stress, here indicated as ["], in a word. In a word containing no long consonant and no long vowel, the primary stress falls on the first vowel from the beginning of the word; if a word contains one or more long vowels, but no long consonants, the primary stress falls on the first long vowel from the beginning of the word; if a word contains a long consonant, the primary stress falls on the vowel preceding this long consonant. In a word containing only vowels, the primary stress falls on the first long vowel from the beginning of the word. No two words in Panjabi contrast by stress only. The secondary stress, here indicated as ['], occurs as an allophone of loudness on all long vowels not bearing a primary stress.
Examples: /"kələm/'pen', /"um'id/'hope', /"lətt'ã/'legs', /"ay'a/'come'.

1.5. Segmental phonemes. In the following description of segmental phonemes, all words cited as examples are to be taken as mere abstractions, and therefore contour notation is omitted. Segmental phonemes are divided into vowels and consonants.

1.6. The vowels. There are ten vowels. Their classification in terms of length yields two homogeneous groups with different characteristics. Only long vowels may occur with nasalization, or in word-final position. This classification facilitates also the stating of the rules about stress given above. There are seven long vowels and three short vowels. All occur in both stressed and unstressed syllables. All are relatively tense when unstressed. The length of a long vowel varies from approximately one and a half to three times the length of a short vowel. The fact that the vowels here classified as long may in certain cases, as when speaking hesitatingly, be indefinately prolonged without causing an unnatural effect, while the vowels here classified as short may not, supports this classification, which is the traditional one for many languages of India. Long vowels tend to occur extra long when bearing a tone other than level. These variations are not phonemic.
There are ten contrasting positions:
/i/ is the class of high unrounded front-vowel phones: /isvi/'century', /sinkh/'match', /paṇi/'water'.
/y/ is the class of lower high unrounded front-vowel phones [I]: /ynam/'prize', /bylli/'cat'. The allophone [I˜] appears in the

environment /-a/: /zyada/[zɪ˘ada]'more', /tyar/[tɪ˘ar]'ready'. When initial and followed by a vowel this phoneme occurs as a voiced alveo-palatal median phone [y]: /yar/[yar]'friend', /yâ/[yâ]'or'.

/e/ is the class of mid unrounded front-vowel phones: /ese/'this one', /gend/'ball', /je/'if'. It is rare in initial position.

/ɛ/ is the class of low unrounded front-vowel phones: /ɛb/'vice', /sɛr/'walk', /pɛ/'to lie'.

/a/ is the class of low unrounded central vowel phones: /anḍa/'egg', /saf/'clean', /bora/'sack'.

/ɔ/ is the class of low rounded back vowel phones: /ɔrt/'woman', /pɔṇ/'wind', /nɔ̃/'nine'. It is very rare in final position.

/ə/ is the class of mid unrounded back-vowel phones: it appears as [ə] when stressed, as [ʌ] when unstressed: /rəbba/[rʌbb"a] 'Oh God', /rəbb/["rəbb]'god', /lətt̃a/[lʌtt"ã]'legs', /lətt/ ["lətt]'leg'. [Editor's note: /rəbba/ and /lətt̃a/ do not seem to follow the rules for stress!—GLT]

/o/ is the class of mid rounded back-vowel phones: /ostrã/'like that', /dost/'friend', /jo/'whatever'.

/w/ is the class of lower high rounded back-vowel phones [ʊ]: /wtte/'on', /khwsdil/'cheerful'. When followed by a vowel, this phoneme occurs as a voiced bilabial median phone [w]: /pwa/[pwa] 'to cause to pour', /swar/[swar]'rider'.

/u/ is the class of high rounded back vowel phones: /uṭh/'camel', /pura/'complete', /aṛu/'peach'.

1.7. Note on the semivowels. The semivowel sounds, usually indicated by [w] and [y], are here interpreted as allophones of the short vowels [ʊ] and [ɪ], since there is a clear complementary distribution and this interpretation permits us to reduce the phonemic inventory by two. This is partially in agreement with the Panjabi writing system which provides a special symbol for the semivowel [y], but no symbol for the semivowel [w], which is indicated in the same way as [ʊ]. Even the symbol for the semivowel [y], is used very rarely, being constantly confused with the symbol for [ɪ], and it occurs commonly only in the word [yar].

1.8. The Consonants. All consonants are relatively fortis when pre-

ceding a stressed vowel, and slightly less so elsewhere. All consonants occur long, except /h ṇ r ṛ/. Long consonants are prolonged and more fortis. Consonants may occur long only after short vowels. There are twenty six consonant phonemes: eight stops, three aspirated stops, three affricates, six fricatives, three nasals, one flap, one trill, one lateral. Of these, seventeen contrast in the same position and environment:

/pəll/'time'
/bəll/'burn'
/təll/'fry'
/dəll/'to grind'
/ṭəll/'bell'
/kəll/'yesterday'
/gəll/'matter'
/thəll/'to turn over'
/khəll/'skin'
/cəll/'let us go'
/jəll/'to burn'
/chəll/'wave'
/fəll/'fruit'
/vall/'to twist'
/hall/'plough'
/məll/'rub'
/rəll/'mix'

The stops:

/p/ subsumes voiceless bilabial stop phones: /pas/'near', /cəpəl/ 'sandal', /chap/ 'ring'.

/b/ subsumes voiced correlates of /p/: /bal/'child', /ṭəbər/'family', /jərab/'sock'.

/t/ subsumes voiceless apico-dental stop phones: /tera/'your', /cita/'leopard', /babət/'about'.

/d/ subsumes voiced correlates of /t/: /dərvaza/'door', /cadər/ 'sheet', /cand/'moon'.

/ṭ/ subsumes voiceless apico-domal stop phones: /ṭəll/'bell', /məṭər/'pea', /pɛkət/'packet'.

/ḍ/ subsumes voiced correlates of /ṭ/: /ḍar/'flock', /anḍa/'egg', /kheḍ/'to play'.

/k/ subsumes voiceless dorso-velar stop phones: /kwtta/'dog', /makan/'building', /malək/'master'.

/g/ subsumes voiced correlates of /k/: /gəll/'matter', /səngt/ 'crowd', /bag/'garden'.

The stops /p t ṭ k / are always phonetically [p$^{=}$ t$^{=}$ ṭ$^{=}$ k$^{=}$]. The voiced correlates of these are sometimes aspirated by some speakers in final or medial position when the preceding vowel bears a high falling tone. This

occurs mostly in the speech of educated speakers under the influence of the spelling system of Panjabi.

Examples are: [lâbʿaek]/lâbdaek/'useful', [ərâmbʿ]/ərânb/'to begin', [gâdʿa]/gâda/'ass', [krôdʿ]/krôd/'anger', [sâŋgʿ]/sâng/'throat', [khâŋgʿã]/khângã/'coughs', [gəɳḍʿa]/gəɳḍa/'onion', [sũɳḍʿ]/sunḍ/'tusk'.

The aspirates:

/th/ subsumes aspirated correlates of /t/: /thã/'place', /wthe/'there', /loth/'corpse'.

/kh/ subsumes aspirated correlates of /k/: /khol/'open', /sinkhã/'matches', /akh/'eye'.

/ṭh/ subsumes aspirated correlates of /t/: /ṭhik/'right', /jəṭhani/ 'husband's elder brother's wife', /bɛṭh/'to sit'.

The affricates:

/c/ subsumes voiceless apico-alveopalatal stop phones: /car/'four', /bəcca/'child', /səc/'truth'.

/j/ subsumes voiced correlates of /c/: /ja/'to go', /tija/'third', /pənj/'five'.

/ch/ subsumes aspirated correlates of /c/: /chota/'small', /gwcha/'bunch', /puch/'tail'.

The phoneme /j/ is sometimes aspirated in medial or final position when the preceding vowel bears a high falling tone. Examples are: [rîjʿ]/rîj/'wish', [rîjʿã]/rîjã/'wishes'.

The fricatives:

/f/ subsumes voiceless labio-dental slit spirants: /fwll/'flower', /ləfafa/'envelope', /saf/'clean'.

/v/ subsumes voiced correlates of /f/: /val/'hair', /səver/'morning', /pav/'meaning'.

/s/ subsumes voiceless lamino-alveolar groove spirants: /sal/'year' /dost/'friend', /pas/'near'.

/z/ subsumes voiced correlates of /s/: /zyada/'very', /əvazã/'voices', /əvaz/'voice'.

/š/ subsumes voiceless lamino-palatal groove spirants: /šiši/'bottle', /hoš/'sense'.

/h/ subsumes voiced glottal slit spirants. It occurs only initially: /hą̃/'yes'.

The nasals:

/m/ subsumes bilabial nasals: /mal/'property', /admi/'man', /ynam/'prize'.

/n/ subsumes dental nasals: /nal/'with', /hạnera/'darkness', /sən/'they were'.

/ṇ/ subsumes retroflex nasals: /paṇi/'water', /hwṇ/'now'. It does not occur in initial position.

The point of articulation of a nasal in position before a consonants is determined by the nature of this consonant. A few final clusters, of the type heterorganic nasal plus consonant, occur in rapid speech, but may be treated as exceptional, since they are most often broken up by the insertion of /ə/. As a rule, in position before a consonant there is no phonemic contrast between the five phones [m n ṇ ŋ ñj], here transcribed as /n/ in this position.

Labial allophones occur before a labial: [amb]/anb/'mango'.

Dental allophones occur before a dental: [swndər]/swndər/'beautiful'.

Retroflex allophones occur before a retroflex: [mwṇda]/mwṇda/'boy'.

Velar allophones occur before a velar: [rəŋg]/rəng/'color'.

Palatal allophones occur before a palatal: [pəñj]/pənj/'five'. [Editor's note: This treatment involves phonetic overlapping with the phonemes /m/ and /ṇ/; it would be better theoretically to treat [mb] as /mb/ phonemically and [ṇḍ] as /ṇḍ/, and state that /n/ has the allophones [n, ŋ, ñ].--GLT]

The flap:

/r/ subsumes apico-dental flaps: /rat/'night', /sara/ 'all', /yar/'friend'.

The trill:

/ṛ/ subsumes apico-domal trills: /cạṛu/'broom', /dɔṛ/'to run'.

It does not occur in initial position.

The lateral:

/l/ subsumes apico-dental lateral phones: /ləbb/'to find', /mwl/'price', /dəlil/'reasoning'.

1.9. Observation. In the usage of many speakers the phonemes /kh/ and /f/ are replaced in all or in some positions by [x] and [ph]. Moreover the phoneme /g/ is sometimes replaced in intervocalic position by [ɣ]. These substitutions are, however, rather unlikely to occur in the speech of educated speakers of Malwi.

2.0. Syllabic structure. A syllable consists of a vocalic nucleus and of attached consonants. Syllabic structure may be indicated by the

formula ±C1+N±C2, where N stands for vocalic nucleus, C1 for any consonant or cluster preceding the nucleus, and C2 for any consonant or cluster following the nucleus. A syllable is closed in the presence of C2, open in absence of C2.

2.1. Long vowels occur initially, medially, and finally, but they do not occur before long consonants. Short vowels do not occur in final position. The only geminate cluster which occurs is /ãa/, in which the first element has a high falling tone and the second level tone. Non-geminate clusters are somewhat limited, and are rare except in final position. /ɛ/ and /ɔ/ do not occur in clusters. The type most frequently occurring is /a/ or /i/ plus vowel.

N is represented by all the vowels singly and by the following diphthongs:

/yo/	/pyo/'father'	/ɔi/	/gɔi/'gone'
/yɔ/	/lyɔna/'to bring'	/ɛe/	/lɛe/'taken'
/ya/	/gya/'gone'	/ɔo/	/pɔo/'lie down'
/wa/	/gwa/'lose'		

The first element of a diphthong is always a short vowel.

2.2. C1 is represented by all the consonants singly and by several clusters. Clusters have been charted to show the distribution and its limitations.

Initial Clusters CC-

	p	b	t	d	ṭ	ḍ	k	g	th	ṭh	kh	c	j	ch	f	v	s	z	š	m	n	ṇ	r	ṛ	l
p					pṭ		pk			pṭh		pc												pr	pṛ	pl
b												bc										bṇ	br		bl
t																							tr		
d																							dr		
ṭ																									
ḍ																								dṛ	
k	kp				kṭ															km			kr	kṛ	kl
g																							gr		
th																									
ṭh																								ṭhr	
kh	khp																						khr	khṛ	khl
c		cb			cṭ		ck																	cṛ	cl
j								jg												jm					
ch						chḍ	chk																		
f					fṭ												fs							fṛ	fl
v					vṭ	vḍ							vj				vs							vṛ	
s			st	sd	sṭ		sk						sj						sz	sm		sn		sṛ	sl
z																							zr		
š			šṭ																				šr		
n																									nl

	p	b	t	d	ṭ	ḍ	k	g	th	ṭh	kh	c	j	ch	f	v	s	ṣ	ś	m	n	ṇ	r	ṛ	l
n												nc													
p																									
r					rṭ																				
ṛ																									
l	lb																								

Consonantal allophones of /w/ and /y/, not included in the chart, occur respectively after /p d k g kh j s m r/. The phonemes /s/ and /p/ have the highest frequency as first member of a cluster (ten and seven occurrencies). The phonemes /r/ and /ṛ/ have the highest frequency as second member of a cluster (nine occurrences).

Following is a list of initial clusters with examples.

/pC/ /ptaka/'fire cracker', /pkaɾ/ to cook', /pthan/'a caste', /pca/'to reach', /prathna/'prayer', /prɛ̃/'to teach', /pla/'a rice dish'.

/bC/ /bṭa/'to make', /bramaṇ/'bramin', /bla/'to call', /bca/'to save'.

/tC/ /trɛ/'three'.

/dC/ /drəkhɔt/'tree'.

/ḍC/ /ḍṛa/'to frighten'.

/kC/ /kpətta/'quarrelsome', /kṭori/'small bowl', /kma/'to earn', /krəṛ/'million', /kṛaka/'patch', /klenk/'blemish'.

/gC/ /gra/'to cause to fall'.

/ṭhC/ /ṭhṛa/'to cause to wait'.

/khC/ /khpa/'to cause to tease', /khrab/'bad', /khrɛ̃/'to step', /khla/'to get open'.

/cC/ /cba/'to cause to chew', /cṭa/'to cause to lick', /cka/'to cause to lift', /cṛɛ̃/'to cause to climb', /claki/'cunningness'.

/jC/ /jga/'to light', /jma/'to solidify'.

/chC/ /chpa/'to cause to draw', /chda/'to leave', /chka/'to feed'.

/fC/ /fṭa/'to cause to tear', /fsa/'to get stuck', /fṛa/'to hand', /fla/'to blow up'.

/vC/ /vṭa/'to exchange', /vṛɛ̃/'to get out', /vja/'to play', /vsa/'to inhabit', /vṛa/'to cause to enter'.

/sC/ /sta/'to bother', /sdaruṇ/'to return', /sṭa/'to cause to throw', /ska/'to cause to dry', /sja/'to decorate', /ssa/'punishment', /sṇa/'to tell', /sṛa/'to burn', /slɛ̃/'advice', /smapti/'ending'.

/sC/ /sruri/'necessary'.

/ʧ/ /ʧan/'cunning', /ʧrab/'wine'.
/nʧ/ /nʧa/'to mix'.
/nʤ/ /nʤa/'to cause to dance'.
/rʤ/ /rʤa/'to cause to memorize'.
/lʧ/ /lʧā/'to find'.

2.3. CC is represented by all the consonants singly and by several clusters. Clusters have been charted to show the distribution and its limitations.

Final Clusters -CC

	p	b	t	d	ʈ	ɖ	k	g	th	ʈh	kh	c	j	ch	f	v	s	ʃ	x	m	n	ŋ	r	ɽ	l
p			pt		pʈ																				
b			bt	bd			bk																		
t																				tm					
d																								ʈɽ	
ʈ																									
ɖ																									
k			kt																	km					
g																									
th																									
ʈh																									
kh			kht																						
c			ct	cd			ck																		
j																									
ch																									
f			ft																fx						
v																									
s			sp	st																sm					
ʃ			ʃb																						ʃl
x						ʂɖ		ʂk																	
m								mk																	
n			nt	nd	nʈ	nɖ	nk	ng	nth	nʈh	nkh		nj	nch	nf		ns			nm		ŋŋ			
ŋ																									
r			rt				rk		rth				rj	rch	rf			rs	rʃ	rmrn					
ɽ							ɽk								ɽf										
l			lt	ld	lʈ								lj				ls			lm		lŋ		lp	

The phoneme /t/ has the highest frequency as last member of a final cluster (ten occurrences). The phoneme /n/ has the highest occurency a penultimate member of a final cluster (sixteen occurrences). In the clusters given in the chart /n/ represents homorganic nasal. It is noteworthy that it does not occur before final /y/.

Following is a list of clusters with examples.

/ʧy/ /dyloʧy/'interesting'.
/ʧh/ /nʧh/'religion', /aʧh/'mango', /arʧh/'krab'.

/Ct/ /smapt/'finished', /sɔ̀bt/'confiscated', /vɔ̀kt/'time', /pǫ̀gt/'saint', /ɔ ct/'saving', /mɛft/'free', /dost/'friend', /sant/'saint', /ɔrt/ 'woman', /galt/'wrong'.

/Cd/ /ʃɛ̀bd/'hymn', /bɔ̀od/'saving', /dɛnd/'tooth', /bald/'ox'.

/Cṭ/ /cyṗṭ/'to stick', /bunavṭ/'make', /dʌ̃ṭ/'a word of abuse', /chinṭ/ 'linen', /wlṭ/'to fall'.

/Cǫ̀/ /canǫ̀/'slap'.

/Ck/ /sɔ̀lk/'lesson', /mɔ̀ok/'slowly', /yɔk/'ecstasy', /comk/'brightness', /klɔ̀nk/'blemish', /kɔ̀ǫk/'wheat', /fɛrk/'difference', /sɔ̀ǫk/'road'.

/Cg/ /rang/'color'.

/Cth/ /granth/'name of holy book', /ɔrth/'meaning'.

/Cṭh/ /pɨ̂nṭh/'sixty-five'.

/Ckh/ /sinkh/'match'.

/Cc/ /khɛ̀re/'to spend'.

/Cj/ /pɔ̀nj/'five', /gɛrj/'to thunder', /wlj/'tangle'.

/Cch/ /punch/'tail', /tyrch/'tree'.

/Cf/ /sanf/'a special kind of food', /barf/'ice', /tɔ̀ǫf/'to suffer'.

/Cs/ /hɔ̀ns/'swan'.

/Cz/ /lafz/'word', /kurz/'debt'.

/CN̄/ /yɔrN̄/'man'.

/Cm/ /khɔ̀tm/'finished', /hɔ̀km/'command', /jɔ̀nm/'birth', /rɛam/'custom', /pɛrm/'superstition', /kalm/'pen'.

/Cn/ /hyrn/'deer'.

/Cǫ/ /canǫ/'light'.

/Cr/ /ɔ̀ṭr/'peas'.

/Cl/ /fɛ̀al/'crop ready to harvest'.

Many of the initial and final clusters listed above may be broken up in very careful speech by the insertion of /ə/. All clusters listed are, however, true clusters in normal speech.

2.4. Medial clusters. Medial clusters do not require listing, since all occurring final clusters may occur in intervocalic position also (except the few of the type heterorganic nasal plus consonant), and practically any pair of consonants may occur. No triconsonantal clusters occur in medial position, except the type nasal plus stop plus /r/, /ɣ/, or /l/.

[November 14, 1963]